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ABSTRACT

The argument is put forth in this paper that the academic achievement of black children relative to whites deteriorates over time in school. The argument is substantiated by analyses of data from a statewide study of the standings of black and white children entering kindergarten and from two large National Health Examination Surveys of, respectively, 6- through 11-year-olds and 12- through 17-year-olds. To make comparisons among different ages and with data from more than one study, the "single standard" concept, a statistical technique used frequently by epidemiologists, was employed. In each of the age groups, the average score of the total group of subjects was established as the single standard. Meeting the average was taken to be the standard for subgroup performance; the actual average score of any subgroup was divided by the total group average. The resulting value may be regarded as the ratio of that subgroup's performance to the standard for the total population examined. Scores for different groups on the two parts of the Scholastic Achievement Test provide an example of higher ratios for white and lower ratios for black children. Results of applying the procedure to the state and national data are reported, and implications are discussed. (RH)

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Background Information for Viewing Racial Differences in SAT Scores

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The College Board recently reported in the press (1) the scores of black and white youth on the Scholastic Aptitude Test. The distance between the averages for these two groups is alarmingly large. However, for this researcher, it is as though a bright light has been turned on and now illuminates an area where the outlines have long been there awaiting the public's attention.

In this article a case will be made for the fact that the scholastic performance of black children relative to white children is not helped and may actually be damaged by the experience of their years in school. The data show that blacks of both genders begin school with handicaps relative to whites and that after twelve years of schooling their position is worse rather than better.

This investigator's study of differences for race-gender groups began with an interest in the differences in their health evidenced by the differences in length of life expectancy at birth. These differences in the important matter of length of life are dramatic. White females born in 1980 could look forward to 78 years of life; white males had only 90% of this, or 70 years. The years ahead for black females, 73, came to 94% of the white female figure. With 65 years, the black males had only 83% of the white female expected lifespan.

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Big differences between the mortality figures for these groups begin to appear at adolescence (2). This finding led the author to look at differences in school experience. Data on the standings of the groups at the beginning of kindergarten in one state were the first investigated (3). This was followed by analyses of the two large Health Examination Surveys conducted between the mid-sixties and early seventies by the National Center for Health Statistics. In the first of these a national sample of just under 7,000 children between ages 6 and 11 was studied. There were between 1100 and 1200 subjects at each age level, of whom about 1,000 were white and about 160 were black. Approximately half of each racial group at each age were male and half female. The similarly-designed sample of youth between 12 and 17 in the second study numbered 6,700, with 5,700 white and 1,000 black. Not only was the physical condition and health history of each of these subjects examined, but the study included information on school performance, intellectual development and, indeed, many aspects of the experiences and reactions of the children. The two studies provide a very rich source of information for examining differences by groups at each year of life between ages 6 and 17 (4).

In the interest of brevity, the present article will focus on the differences by the racial groups taken as a whole. The substantial and interesting gender differences within each racial group will be expanded upon in a subsequent report.

Similarly, the focus here is upon scholastic aptitude and performance. Previous articles have presented data on health status as well as measures of self esteem and social supports of the subjects (4).

The purpose now is to look at evidence reflecting scholastic performance of black and white children to determine the size of the gap in average scores at various cross-sections between school entrance and the end of high school. Both aptitude and achievement test data are included. The findings should bear upon the question of the effects of schooling on differences in academic performance of black and white children.

To make the comparisons for different ages and with data from more than one study, the "single standard" concept will be employed. This is a statistical technique used frequently by epidemiologists. In each of the age groups the single standard will be the average score of the total group of subjects. Meeting the average is taken to be the standard for sub-group performance. The actual average score of any subgroup is divided by the total group average. The resulting value may be regarded as the ratio of that subgroup's performance to the standard for the total population examined. It is these ratios which permit comparisons among different points in time and for tests of different academic areas.

The scores for different groups for the two portions of the SAT make a start-off example. The average scores for the entire group of one million students who took the tests in 1980-81 were 424 for the Verbal portion and 466 for Math. These figures

are to be used as the single standard for each test. The ratio for white students on the Verbal test, where the white average was 442, was found to be 1.04, the result of dividing 442 by 424. The ratio for white students on Math was 1.03, the result of dividing their Math average of 483 by 466. The ratios for both tests for the white group have thus been found to be above standard and very close together.

The average scores of black students were 332 for Verbal, 362 for Math. Dividing each by the relevant single standard produced ratios of .783 for Verbal and .776 for Math. Both ratios for the black students were below standard and, again, very close together.

The same operation was employed for testing results for black and white students from the groups described above:

a. a statewide sample from one southern state of 500 children -- approximately 200 black and 300 white -- tested with various instruments at the point of kindergarten entrance;

b. a national sample of 7000 -- approximately 1000 black and 6000 white -- with almost 1200 at each age level from 6 through 11 years of age. These children were the subjects in the Health Examination Survey (Cycle II) conducted in the mid-1960's by the National Center for Health Statistics;

c. a population very similar to the one described just above. This study, known as Health Examination Survey (Cycle III), included data for 6000 adolescents, ages 12 through 17, 1000 of whom were black and the remainder white. Again, the numbers at each age level were comparable, and approximately half at each level were male and half were female.

Table 1 contains information on aptitude and/or performance tests from all of those groups in the form of the testing instrument used, the size of the single standard, the ratios for black and white children and the numbers of children in each subgroup.

--- Table 1 goes here ---

From these data three points are clear. First, whether the tests are for aptitude or achievement, all ratios for whites are a little over 1.0 and for blacks they are less than 1.0. Beginning at kindergarten entrance and consistently throughout their school careers, white children have a slightly better-than-average position, while the position of black children's performance is under the average mark.

Secondly, at all age levels, positions of the racial groups tend to be similar for the verbal and nonverbal/mathematics areas of performance.

Table 1. Ratios for black and white student averages at various levels of schooling from kindergarten entrance to end of high school.

Age/Grade Level	Test Instrument	Total Group Average	Subgroups: Black Ratio	Black N	White Ratio	White N
Kindergarten Entrance	Preschool Inventory (Educational Testing Service)	45.08	.87	157	1.08	247
	Peabody Picture Vocabulary Test (American Guideance Service)	47.06	.82	188	1.11	304
	Test of Basic Experience:Language (California Test Bureau)	14.66	.82	188	1.11	305
	Test of Basic Experience: Math (California Test Bureau)	15.28	.82	188	1.11	305
Elementary School						
Intellect. Abil.	WISC Verbal Ability	(Scores in percentile equivalents)		(Approx.) N		(Approx.) N
Age 6		49.96	.87	160	1.02	1000
Age 9		50.74	.845	160	1.025	1000
	WISC Block Design					
Age 6		50.31	.86	160	1.025	1000
Age 9		50.11	.835	160	1.025	1000
Achievement Tests	WRAT Reading					
Age 6		50.53	.94	160	1.015	1000
Age 9		50.47	.85	160	1.02	1000
	WRAT Arithmetic					
Age 6		50.67	.90	160	1.015	1000
Age 9		49.98	.87	160	1.02	1000

Table 1, continued.

Age/Grade Level	Test Instrument	Total Group Average	Subgroups			
			Black		White	
			Ratio	N (Approx.)	Ratio	N (Approx.)
Secondary School Ages						
Younger Group (12, 13 & 14 years of age)	WRAT Reading	44.83	.77	545	1.04	3035
	WRAT Math	20.97	.76	545	1.04	3035
Older Group (15, 16 & 17 years of age)	WRAT Reading	51.72	.78	545	1.04	3035
	WRAT Math	24.85	.74	545	1.04	3035

Thirdly, the ratios for whites remain relatively constant from kindergarten through elementary grades and high school. The ratios for the older secondary school ages -- 15 through 17 -- were almost identical to the ratios for the SAT performance. In contrast, the ratios for blacks fell from figures in the mid to high 80's for the elementary school ages to the mid to high 70's among the older secondary school ages. Again, the ratios for the older secondary school students were almost exactly the ratios for the SAT performance of black students.

The third point is evidence for the argument put forth in this article, that the academic performance of black children relative to white actually deteriorates over time in school. The unequal position at the beginning of elementary school became even more unequal by the end of high school.

The argument could be made that the picture we have seen is due to the particular cohorts studied.. It appears unlikely that that claim would seriously be made, however. Between the mid-sixties when the elementary school children were studied and the early seventies when the high school study was carried out, efforts at improving schooling for blacks were under way in most of the country. These would lead if anything to higher scores, not lower scores, at later dates, while these data have shown a drop in black averages. The close correspondence between ratios for older black high school youth, from the mid-seventies, and the 1980-81 SAT ratios for the black averages also argues against cohort differences being responsible for the differences over time.

It is not surprising that other aspects of the school experience of the children and youth studied in the Health Examination Surveys attest to a poorer position for blacks in ways other than academic performance.

Two of these which occurred with the elementary school ages are 1) the proportions avoiding the failure of repeating a grade and 2) the proportions whose adjustment to school was rated by teachers as "not a problem." 84% of the total sample were promoted rather than having to repeat a grade. This percentage was 85% for whites, but 77% for blacks. When these figures are put into terms of ratios, the white ratio is found to be 1.01, while for blacks it was .91.

The percentage of the total sample whose adjustment to school was rated as "no problem" as opposed to "has an adjustment problem" was 83%. The figure was the same for whites, giving them a ratio of 1.0. For blacks the percentage of 80 was equivalent to a ratio of .95. Many other examples showing more of the negative and less of the positive in school experience for black children could be added from the Health Examination Survey study of children at elementary school ages.

To analyze the secondary school survey data, scales were constructed to combine items and produce a score for more general variables. Several of the scales represented support received from various sources of which the school was one, peers another, the community another. Another scale combined items to measure the subjects' self esteem (6).

The ratios for the adolescents of the two races on these scales again showed those of the whites to be slightly higher than the group averages and the blacks to be somewhat lower than 1.0. For peer-support, community support and self esteem the ratios were all 1.01 for whites, while for blacks they were .86, .92 and .95 respectively. For school support, however, the white ratio was somewhat higher at 1.03, and the black ratio for school support was considerably lower than the other ratios at .82.

Space does not permit looking at the differences of the gender groups within each racial group. It must be noted, however, that the position of the black males on these support scores, especially school support, is much lower than that of the black females. This same gender difference is also true for the academic performance at the secondary school level. School support scores also differed by gender among white youths, with female averages significantly higher than males. However, the weaker position of the black group in general makes the position of the black male in the school environment an especially vulnerable one.

The differences between the scores of blacks and whites as recently revealed in the report regarding SAT scores are all too well-known to those familiar with these reports from the Health Examination Surveys. The lesson to be gained from the Survey data is that the schools must attend to the damaging effects of school experience upon blacks. We believe these effects have been made explicit in the data presented here. School systems should give priority to the goal of moving the ratios for black performance toward the point of 1.0, a standard performance. That would appear to be the place to begin if the gap is ever to be narrowed and equality achieved in performance on college entrance exams and other important gateways to opportunity.

Notes

1. College Entrance Examination Board. Profiles, College-Bound Seniors, 1981. New York: The College Board, 1982, is the reference for the report itself.

2. See, for one source, National Center for Health Statistics, Facts of Life and Death. Washington, D.C.: U. S. Public Health Service. DHEW Publication No. (PHS)79-1222. November, 1978.

3. Results of the study were reported in Landsberger, B.H., Is there a correlation between school experience and life expectancy? In The Innovator (University of Michigan School of Education) Vol. 10 No. 7, pp. 9 - 11. January, 1979.

4. The design of these surveys is described in the following publications:

   a) National Center for Health Statistics: Plan, operation and response results of a program of children's examinations. Vital and Health Statistics, Series 1, No. 5, PHS Publ. No. 1000. Washington, D.C.: U.S. Government Printing Office. October, 1967.

   b) National Center for Health Statistics: Plan and operation of a health examination survey of U.S. Youths between 12-17 years of age. Public Health Service Publication No. 1000. Vital and Health Statistics, Series 1, No. 8. Washington, D.C.: U.S. Government Printing Office. September, 1969.

5. See Landsberger, B.H., Adolescents' health status: Sex differences among whites and nonwhites. Journal of Adolescent Health Care: 2, pp. 9 - 18. 1981.

6. The scales are described in the following article, scheduled to appear in 1982 in Resources in Education:

   Landsberger, Betty H., Relationships between health status, self esteem and social support among adolescents: gender and race group differences.